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Price and Income Support Programs
on Marginal Farms**

WEST VIRGINIA UNIVERSITY
AGRICULTURAL EXPERIMENT STATION

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HOMER C. EVANS, W. W. ARMENTROUT, and ROBERT L. JACK

Introduction

LOW-INCOME farms and farmers are commonly included in the agricultural picture when advocates of government intervention in the agricultural economy state their case. The inclusion of low-income farms, of course, has the effect of worsening the agricultural income picture and thus strengthening the case.

The picture of the plight of agriculture, when used to advocate government intervention, is commonly painted in one or more of three colors: (1) some type of relationship of the prices of farm commodities to prices of all commodities; (2) the dollar value of total agricultural production; and (3) some average income per farm, such as cash marketings per farm, operators net income per farm, etc.

The literature is replete with the agricultural picture painted in these three colors. A few quotations will serve to illustrate it. Murray Benedict says:

By the fall of 1920 the short post-war boom in farm commodity and land prices had passed its peak, and the prices of farm products were skidding downward at a rate that was even faster than the spectacular rate of increase in 1916, 1917, and 1918. Agricultural prices reached their highest level in July, 1919 (246 per cent of the 1913 base) approximately a year before the highest point of the all-commodity index was reached (272 in May 1920). Food prices to the consumer continued to climb for some time after prices at the farm had begun to fall. Their maximum, like that for all commodities, was reached in May 1920 at an index of 287. Cloth and clothing reached their peak in February and March 1920 (at 356) and house furnishings in September and October (at 371). Lumber and metals which had remained at lower levels during the war years moved up rapidly, lumber reaching a top of 341 in April and May 1920 and metals a high point of 195 in April.

Thus, by the spring of 1921, American agriculture found itself in a more unfavorable position than it had experienced at any time in the memory of men then living or possibly at any time since the nation's beginning.

The purchasing power of farm products in terms of non-agricultural products was down to 63 per cent as compared to prewar.

By the winter of 1921 farmers in the Dakotas and Nebraska were burning corn for fuel and trading wool for needed socks and shirts. The clamor for relief took on new forms and greater intensity. It was in this setting that the

newly formed American Farm Bureau Federation began its campaign for farm legislation. The Grange and Farmers Union took on new life, and various radical farm organizations gained new strength.

As a result, the succeeding decade was to see a marked change in the legislative activities of farm organizations and in farmer attitude concerning the role of government in agricultural affairs.¹

The picture of the plight of the farmer is here painted in the color of the relation of farm prices, an average, to prices of all commodities, another average. Any worsening in this relationship is a signal for stepped-up government intervention.

In discussing the gradual recovery in farm areas during the 1920's Benedict says:

The gap between farm and non-farm prices as measured by prewar relationships was narrowing. Whereas in 1921 farm products had a purchasing power of only 84 as compared with 100 in 1910-14, this ratio by 1928 had risen to 94. Thus, farm products though still not up to the 1910-14 relationship with other prices were not so severely depressed as the pressure for farm relief implied. The farm relief drive of 1928 and early 1929 was more an after effect of earlier depression years than a response to current conditions.²

In a footnote Benedict uses another color to paint the picture, namely an average farm income.

This gradual improvement stated in terms of changes in average income is shown in the following figures taken from the Bureau of Agricultural Economics publication, 'The Farm Income Situation,' July-September 1951, page 20.³

Year	Cash Receipts from Farm Marketing Per Farm	Operator's Net Income Per Farm
1920	\$1,955	\$1,073
1921	1,248	573
1922	1,319	646
1923	1,492	774
1924	1,606	823
1925	1,730	977
1926	1,664	913
1927	1,714	921
1928	1,752	909
1929	1,796	975

In his book Schultz says:

Despite its many ingredients, most of the farm problem boils down to issues affecting the level of farm income. Most farm people find themselves in the nation's lowest income brackets. In 1929 the income per person on farms from farming was \$233, and the income of those not on farms was \$870; in 1932 these figures were \$74 and \$442, respectively; in 1937 they were \$197 and \$671, and in the war year 1942 they climbed to \$389 and \$1,023.⁴

¹Murray Benedict, *Farm Policies of the United States, 1790-1950*. The Twentieth Century Fund, New York, 1953, p. 151.

²*Ibid.*, p. 231.

³*Ibid.*, p. 231.

⁴Theodore W. Schultz, *Agriculture in an Unstable Economy*. Committee for Economic Development. McGraw-Hill Book Company, Inc., New York and London, 1945, p. 209.

Schultz also states:

The general low level of farm income is the backdrop against which policies concerned with the instability of farm income must be projected.⁵

Another illustration of how the agricultural situation is commonly measured is found in the following quotation:

Farm recovery requires, in short, that producers' prices shall rise more than consumers' prices, in other words, that spreads between country and city prices shall be reduced. These spreads are generally wider now than they were before 1929, and universally wider than before the war.⁶

Chester C. Davis used all three colors to paint the agricultural picture which he says forced further intervention of the government into agriculture:

Renewed depression fell, with cruel force on the American farmer. Even at the peak of the business cycle in 1929, farm products could be exchanged for only 91 per cent as much of other products, on the average, as they could have been exchanged for in the period before the war. By February 1933, the exchange value of farm products for industrial goods had fallen to 50 per cent of the prewar average. The value in terms of taxes and interest was even less . . . Gross farm income from the production of 1932 was less than half that of 1929 . . . The Department of Agriculture estimated that the average farmer, after paying the expenses of production, rent, interest and taxes had only about \$230 left out of his year's income.⁷

In picturing the improvement in the agricultural situation between 1939 and 1945, Benedict says:

Between 1939 and 1945, total national income rose from \$71.5 billion to \$164 billion, an advance of 129 per cent. Income from farming during the same period increased from \$5.25 billion to approximately \$14 billion or about 165 per cent.⁸

In his message to Congress on November 1, 1943 in which the objectives of the food program were outlined, President Roosevelt stated:

The average income per farmer since the outbreak of the war in 1939 has risen more than the average income of the other parts of the population. This was also true between 1910 and 1914 which is the primary base period for parity calculation. In 1942, the increase in the average income per farmer over the parity base period was 38 per cent greater than the increase in the average income of the other people in the country. In 1943, it was 50 per cent greater.⁹

The inclusion of low-income farms and farmers in the agricultural picture continues in the present. It is not difficult to find evidence to this effect. At a Conference on Problems and Policies of American Agriculture sponsored by the Center for Agricultural Adjustment, Iowa State College, October 27-31, 1958, Johnson and Bachman said:

⁵*Ibid.*, p. 211.

⁶*Yearbook of Agriculture*, 1934, U. S. Department of Agriculture, p. 18.

⁷Chester C. Davis, "Development of Agricultural Policy Since World War I," *Yearbook of Agriculture*, 1940, U. S. Department of Agriculture, p. 313.

⁸Benedict, *op. cit.*, p. 452.

⁹Franklin D. Roosevelt *Public Papers and Addresses*, 1943. Harper & Bros., New York, 1950, pp. 482-483.

Public concern with respect to agriculture stems chiefly from the fact that in recent years farm earnings have failed to keep pace with earnings in other sectors of the economy. For example the index of "real income" for farm workers in terms of 1947-49 dollars declined from 96 in 1950-51 to 84 in 1957. At the same time real income of industrial workers increased from 110 to 129.¹⁰

At this same conference Timmons said:

Farm income, both aggregate and per capita has been lagging behind the growth of the National economy and the non-farm segment. Because many people hold this situation to be extremely undesirable, a generalized objective of agricultural adjustment becomes one of finding ways whereby farm people may earn incomes comparable to incomes received by workers in non-farm employment.¹¹

Both the Republican and Democratic parties darken the picture for agriculture by including low-income farmers in it. The Republican Party platform says:

Americans are the best fed and best clothed people in the World. Our challenge fortunately is one of dealing with abundance, not overcoming shortage. The fullness of our fields, forests, and grazing lands is an important advantage in our struggle against World tyranny and our crusade against poverty. Our farmers have provided us with a powerful weapon in the ideological and economic struggle in which we are now engaged. Yet far too many of our farm families, the source of this strength, have not received a fair return for their labor.

The Democratic Party platform says:

It, the new Democratic Administration, will reaffirm the economic bill of rights which Franklin Roosevelt wrote into the National conscience 16 years ago: 'the right of every farmer to raise and sell his products at a return which will give him and his family a decent living'. We shall take positive action to raise farm income to full parity levels and preserve family farming as a way of life.

Since all farmers, including low-income or marginal farmers, are used in developing the picture of disparity for agriculture, the question arises as to how the programs developed to improve the price and income situation in agriculture have affected low-income farmers. The remainder of this report deals with a description of the problem and an attempt to analyze some of the long-run effects of price and income support programs on farm income in the Appalachian Area, a typical low-income farm area.

The hypothesis to be tested is that the programs which have been developed have, in the longrun, actually worked to the disadvantage of low-income or marginal farming areas. The analysis of this hypothesis is approached by identifying and describing one of the major low-income farm areas of the nation, the Appalachian Area. Next, the extent of government aid to farmers is outlined. With this background

¹⁰*Problems and Policies of American Agriculture*, Iowa State University Press, 1958, p. 9. Paper by S. E. Johnson and K. L. Bachman on "Recent Changes in Resource Use and Farm Incomes."

¹¹*Problems and Policies of American Agriculture*, Iowa State University Press, 1958. Paper by John F. Timmons entitled "Land Institutions."

a theoretical model is developed to illustrate the effects of price and income support programs on low-income farmers as compared with relatively high-income farmers located in specialized farming areas. Next, the model is tested and implications drawn in light of the empirical data used to test the model. (Note: Marginal or specialized areas or farmers are used throughout this report as a handle for relatively high and relatively low cost producers or the disadvantaged producers as compared to the more advantaged producers. While referring to areas it is realized that marginal and specialized producers may be intermingled, one or the other of the two terms would give a fairly good description of the general situation in a given area.)

A Description of a Marginal Farming Area

Figure 1 shows for the United States the average value of products sold per farm in 1954 on a county unit basis. It shows that the Appalachian Area is perhaps the major, but by no means the only low farm income area in the nation. Similar areas of varying degree and extent are scattered throughout the nation and each state contains many individual low-income farms. The fact that in 1954, 56 per cent of the farms provided only 9 per cent of the value of farm sales emphasizes this situation. The low-income farm problem, although often not recognized in policy discussions, has some significance in every state.

Professor James S. Brown of the University of Kentucky has set rather definite bounds as to what is often referred to as the "Appalachian Area" or "Southern Appalachians." Brown defines the area as follows:

The area called "The Southern Appalachians" is comprised of parts of seven Southern states. It is about 640 miles long, running from northern Alabama in the Southwest to Pennsylvania and Maryland in the Northeast. At its widest point, the region is about 275 miles wide. It has a land area of more than 80,000 square miles, almost exactly the size of Minnesota. Only 13 states cover larger land areas. In 1950, the Southern Appalachians region had a population of 5,833,263. Only seven states had larger populations (New York, Pennsylvania, Ohio, Illinois, Michigan, Texas, and California). In the South only Texas had a larger land area or a larger population than this mountain region.

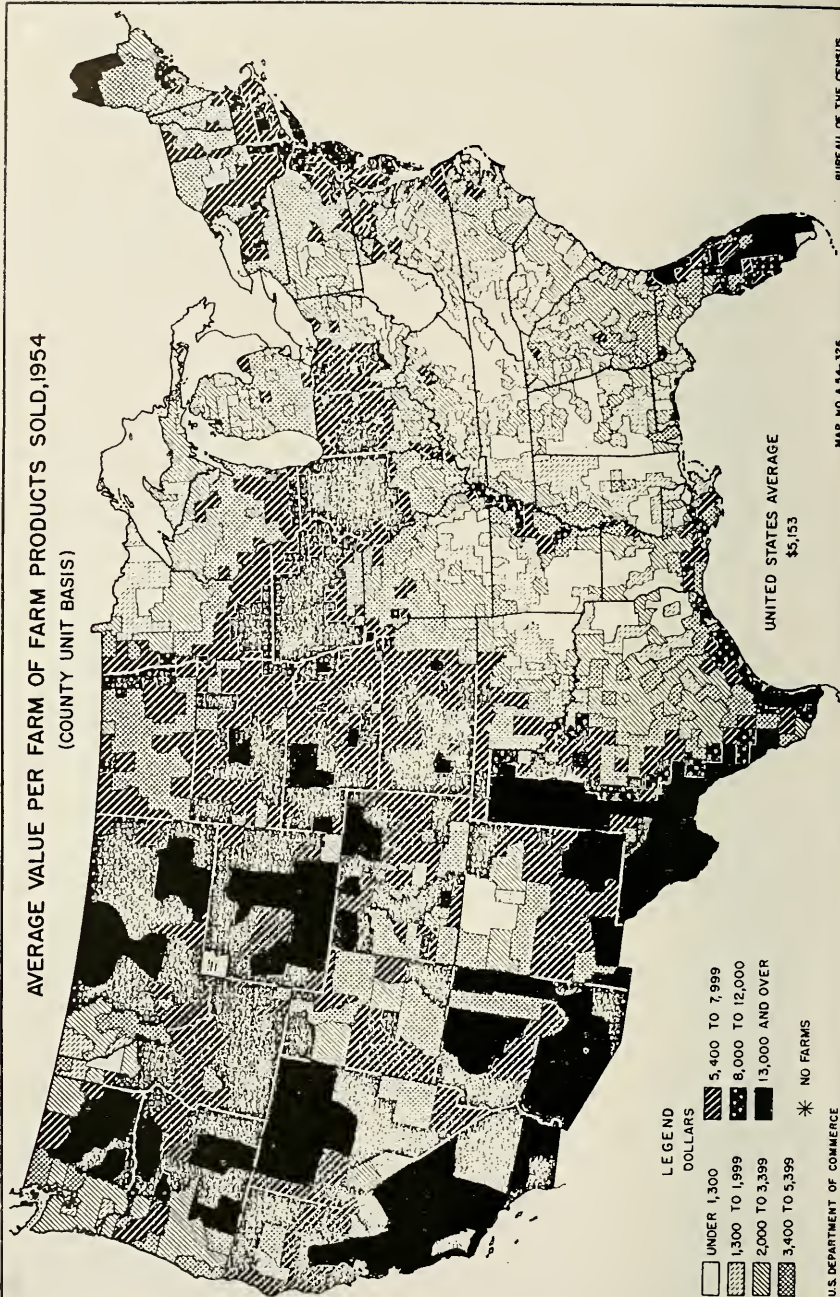
The region includes about 27 per cent of the land area of seven Southern states (Alabama, Georgia, Kentucky, North Carolina, Tennessee, Virginia, and West Virginia). The proportions of states included range from 8 per cent of Alabama to 86 per cent of West Virginia (Georgia 11, North Carolina 19, Kentucky 28, Tennessee 36, Virginia 36).

The region also includes about the same percentage of the total populations of these seven states (26.4 per cent), with the range extending from 7 per cent in Alabama to 82 per cent in West Virginia (Georgia 10, North Carolina 14, Kentucky 27, Virginia 28, Tennessee 40).¹²

¹²In a speech entitled "Migration within, to and from the Southern Appalachians, 1935-1958: Extent, Direction and Social Effects," presented to the Association of Southern Agricultural Workers 56th Annual Convention held in Memphis, Tennessee, February 1959.

FIGURE 1

AVERAGE VALUE PER FARM OF FARM PRODUCTS SOLD, 1954
(COUNTY UNIT BASIS)



Both Brown's report and Figure 1 indicate that a higher proportion, 86 per cent, of the land area of West Virginia is included in the Appalachian Area than is the case of any other state. Since most of the data, both primary and secondary, bearing on our subject are available on a state basis only, West Virginia data will be used as fairly representative of the situation in the area as a whole. State-wide data for any other of the six states touched by the Area are not nearly so representative of the low-income farm problem because a much smaller part of their land areas is located in the Appalachian Area. They also have large areas in which there are relatively good commercial farms.

It is recognized that this use of West Virginia data may darken somewhat the picture for the Appalachian Area. In spite of this, however, it should be pointed out that in 1954, 38.4 per cent of the farms in the Tennessee Valley Region were in economic classes V and VI, having value of sales from farms of under \$2,500 per farm. The Tennessee Valley Region includes 125 water-shed counties in Alabama, Georgia, Kentucky, Mississippi, North Carolina, Tennessee, and Virginia. Some of these counties fall within the Appalachian Area. The Region covers 28 per cent of the total area of the seven states but has 30 per cent of the superior land (Class I and II).

In discussing the record of mechanization and other technologies on production efficiency Bachman says:

Despite the over-all gain in productivity, many of our farms, particularly our smaller ones, have made little progress. Considerable numbers of these farms are found in all sections of the country, but they are more numerous in the "poor soil" areas. There is a particularly large proportion of the total number of farms located in the Eastern Hilly and Piedmont areas, the Appalachian and Ozark Mountain areas, the Southwestern sandy areas, and the Lake States.¹³

In discussing farm size in relation to income Heady and Jensen say:

Poverty in agriculture is as much a problem of farm size as of any other single factor. The great majority of families with low incomes live on under-sized and inadequate units. This statement applies to the whole of the United States agriculture . . . However these low-income farms are concentrated especially in areas such as the Southeast Cotton region, the Appalachian and Ouchita mountain areas, the Great Lakes cut-over region, the Southern corn-belt, disaster areas of the Great Plains and in parts of the stony, hilly New England soils where agriculture has declined in importance.¹⁴

Even though the agricultural situation in the Appalachian Area may be somewhat better than the West Virginia data would indicate, the above quotations illustrate how widely it is held to be a low-income farm area.

¹³"Scale Changes in Farming," Kenneth L. Bachman, *Journal of Farm Economics*, Vol. XXIV, 2, p. 168.

¹⁴Heady, O. E. and H. R. Jensen, *Farm Management Economics*, New York, Prentice Hall, 1954, p. 448.

West Virginia Farm Income Situation

In 1959, the total net income per farm in West Virginia was the lowest of any state in the nation. For the United States in this year, net income per farm was \$2,548, whereas for West Virginia it was \$800.¹⁵

Figures 2, 3, 4, 5 and 6¹⁶ give a picture of the high proportion of West Virginia farms with relatively low incomes. Figure 2 shows the percentage of all farms in the State, by counties, which in 1954 had farm sales of \$25,000 or more. Only 0.5 per cent of the farms in West Virginia had sales of this value, whereas there were 2.5 per cent of such farms in the United States.

Figure 3 shows the percentage of all farms in West Virginia, by counties, which in 1954 had farm sales of \$5,000 or more. In West Virginia, 6 per cent, but in the United States, 27 per cent of the farms had sales of this amount.

Figure 4 shows the percentage of all farms in West Virginia, by counties, which in 1954 had farm sales of \$1,200 to \$4,999. In West Virginia, 13 per cent, but in the United States 33 per cent of the farms had sales of this amount.

Figure 5 points up the predominance of low-income farms in the State. Fifty-one per cent of all farms in the State in 1954 sold less than \$250 of farm products, whereas in the United States only 18 per cent had such small sales.

Figure 6 shows the percentage of farms in West Virginia, by counties, which in 1954 sold less than \$1,200 of farm products, had less than 100 days off-farm employment, and whose off-farm income was less than the value of their farm sales. In 1954, 43 per cent of the farms in West Virginia were in this category as compared with only 5 per cent in the United States. Although this group of farmers has some income from off-farm sources, the data indicate that they are still quite dependent on agriculture for income.

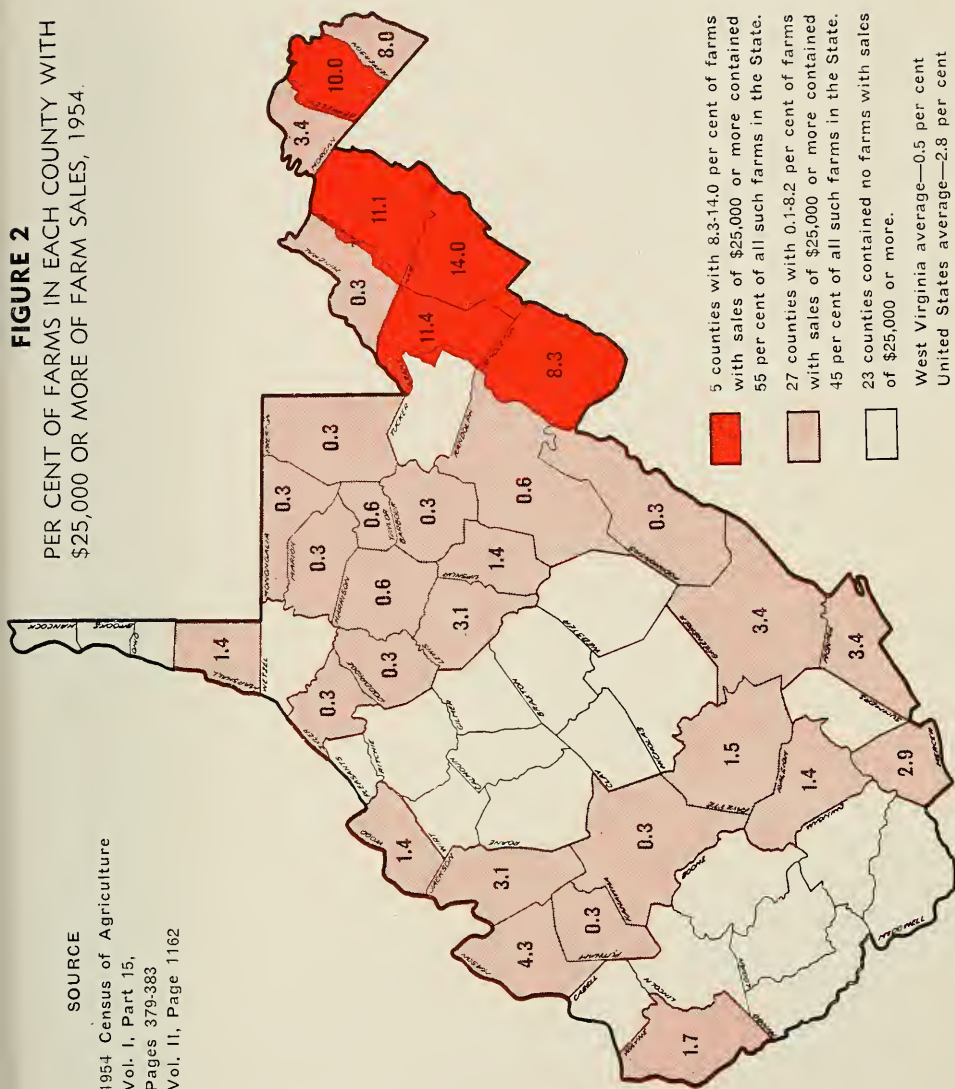
Figure 7 points up the importance of income from the sales of livestock and livestock products in the State as compared to sales from crops; the ratio is approximately 4 to 1 respectively. Feed purchases are important cost items to livestock farmers. Figure 8 illustrates the importance of purchased feeds compared to livestock sales. On the average for the State, \$0.43 of feed was purchased for each \$1.00 of livestock sales.

¹⁵*The Farm Income Situation*, USDA, AMS, FIS-179 (Supplement), August 1960, pp. 8, 9.

¹⁶For a more complete description of the farm income situation in West Virginia see the source of the figures: *West Virginia Agricultural Experiment Station Bulletin No. 433, West Virginia Farming*, George E. Toben and L. T. Warman, November 1959.

FIGURE 2
PER CENT OF FARMS IN EACH COUNTY WITH
\$25,000 OR MORE OF FARM SALES, 1954.

SOURCE
1954 Census of Agriculture
Vol. I, Part 15,
Pages 379-383
Vol. II, Page 1162



PER CENT OF FARMS IN EACH COUNTY WITH
\$5,000 OR MORE OF FARM SALES, 1954.

SOURCE
1954 Census of Agriculture
Vol. I, Part 15,
Pages 379-383
Vol. II, Page 1162

FIGURE 3
PER CENT OF FARMS IN EACH COUNTY WITH
\$5,000 OR MORE OF FARM SALES, 1954.

9 counties with 11-45 per cent of farms with sales of \$5,000 or more contained 54 per cent of all such farms in the State.

19 counties with 3-10 per cent of farms with sales of \$5,000 or more contained 35 per cent of all such farms in the State.

22 counties with 1-2 per cent of farms with sales of \$5,000 or more contained 11 per cent of all such farms in the State.

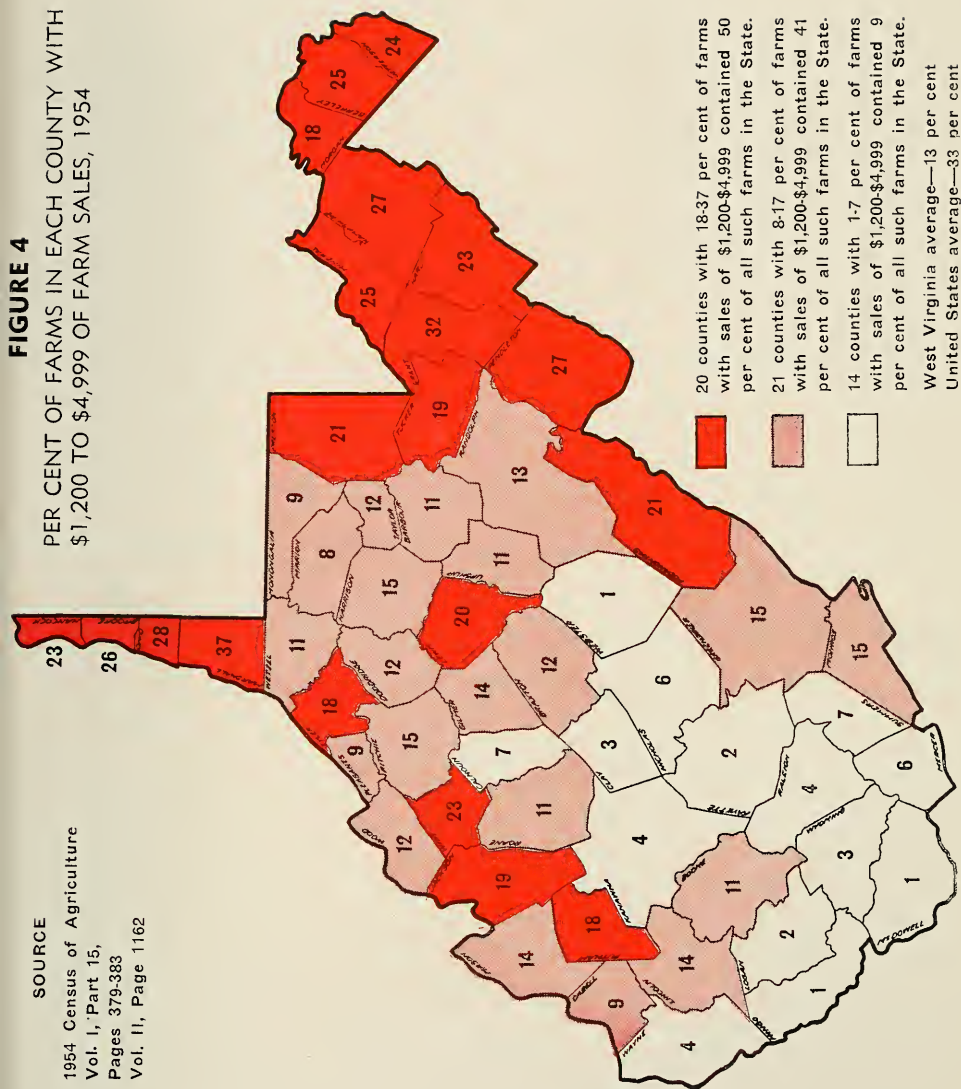
5 counties contained no farms with sales of \$5,000 or more.

West Virginia average—6 per cent
United States average—27 per cent

FIGURE 4
PER CENT OF FARMS IN EACH COUNTY WITH
\$1,200 TO \$4,999 OF FARM SALES, 1954

SOURCE

1954 Census of Agriculture
Vol. I, Part 15,
Pages 379-383
Vol. II, Page 1162



20 counties with 18.37 per cent of farms with sales of \$1,200-\$4,999 contained 50 per cent of all such farms in the State.

21 counties with 8.17 per cent of farms with sales of \$1,200-\$4,999 contained 41 per cent of all such farms in the State.

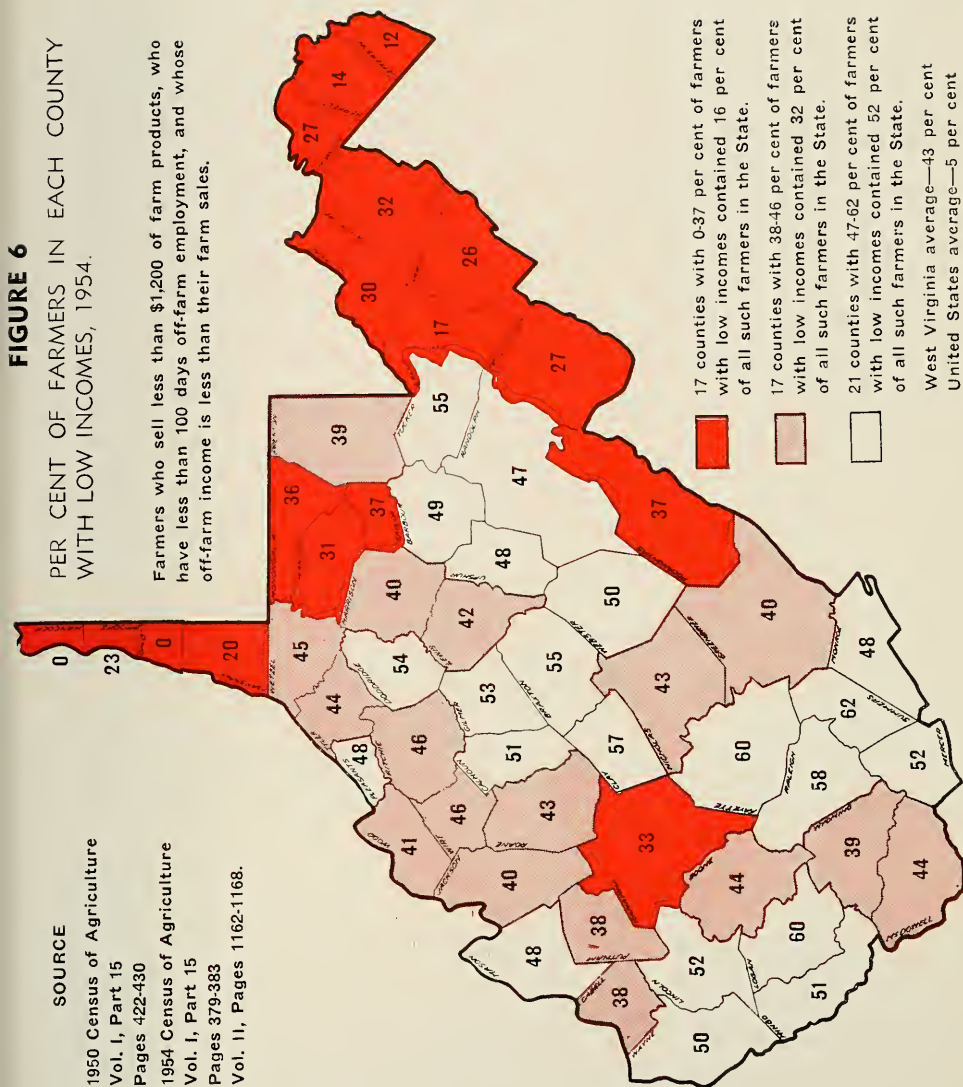
14 counties with 1.7 per cent of farms with sales of \$1,200-\$4,999 contained 9 per cent of all such farms in the State.

West Virginia average—13 per cent
United States average—33 per cent

FIGURE 6

PER CENT OF FARMERS IN EACH COUNTY
WITH LOW INCOMES, 1954.

Farmers who sell less than \$1,200 of farm products, who have less than 100 days off-farm employment, and whose off-farm income is less than their farm sales.



SOURCE

1950 Census of Agriculture
Vol. I, Part 15
Pages 422-430

1954 Census of Agriculture
Vol. I, Part 15
Pages 379-383

Vol. II, Pages 1162-1168.

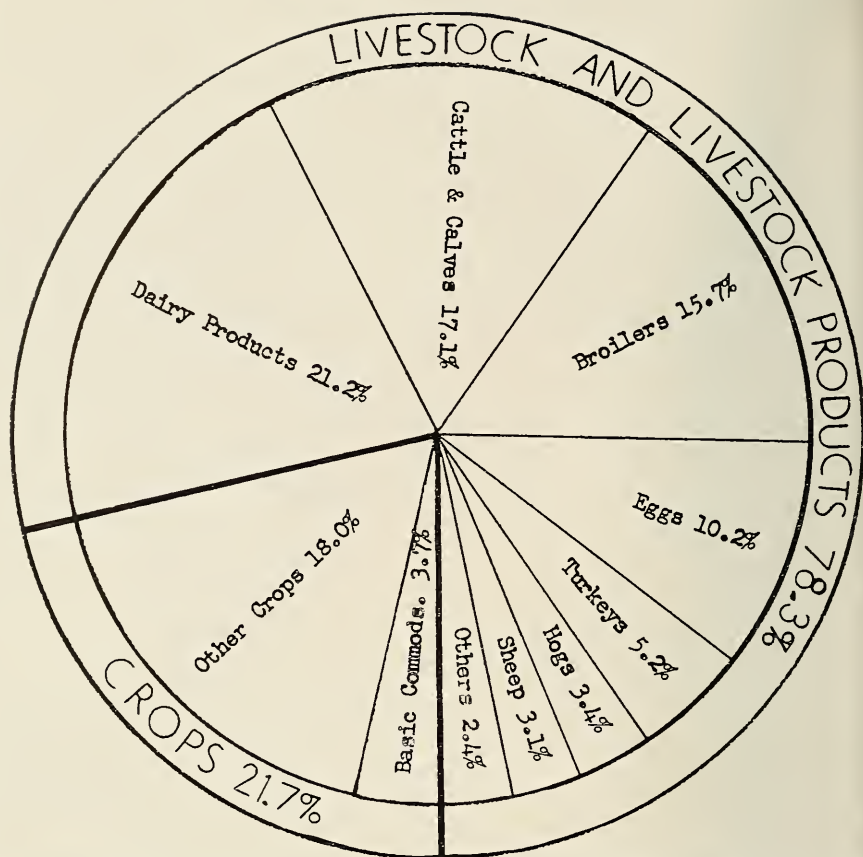


FIGURE 7. West Virginia cash receipts from farm marketing, 1955. (Compiled from West Virginia Agricultural Statistics 1956, Federal-State Crop Reporting Service, Charleston, West Virginia, January 1957, p. 66.)

Thirteen per cent of the counties had feed purchases that exceeded the value of livestock sales.

The data presented in these figures indicate that a high proportion of the farms in West Virginia have relatively low sales of farm products; that many low-income farmers (43 per cent) receive a major part of their total income from farming; that approximately four-fifths of total farm sales are accounted for from the sale of livestock and livestock products; and that feed costs are a major expense item. It would seem reasonable to assume that the situation of the low-income farmer in West Virginia is fairly accurate for the Appalachian Area as defined in this report as well as for low-income farmers in general.

Historical Background of Farm Programs Designed to Improve Prices and Incomes

Since 1929, price supports and acreage allotments have been major elements in our farm programs. The direct goals of these programs have been to stabilize prices and to raise farm income. The United States Department of Agriculture classifies its farm programs into six groups according to their objective, of which price and income programs are one.¹⁷

1. Programs primarily to reduce fluctuation of farm prices and income.
2. Programs to furnish credit-backing to farmers and farm organizations.
3. Programs to conserve natural resources.
4. Programs to improve farming through better education and research.
5. Programs designed for war time, for defense, and for other needs.
6. Other: chiefly school-lunch programs, marketing services, regulatory, crop and animal disease, and pest control.

This study is concerned with the first group, which will be referred to as "group one programs." It is by far the most important from the standpoint of expenditures, accounting for 51.9 per cent of the total realized cost for all farm programs during the period 1932-59.¹⁸ Group one programs have become even more important in recent years, accounting for more than 57 per cent of the total costs for all programs in 1959.

Table 1 gives the realized cost of group one programs for the period 1932-59. The cost of farm price and income programs has fluctuated considerably over the period with the bulk of the expenditure occurring in recent years. The six basic commodities accounted for a major part of the expenditure of farm price and income programs, 64.5 per cent during the 1932-59 period. Wheat, corn, and cotton are the major commodities owned by the Commodity Credit Corporation (CCC) as of October 31, 1959.¹⁹ These three commodities accounted for more than 84 per cent of a total CCC inventory of more than \$7¾ billion. Along with wheat, corn, and cotton, tobacco is one of the major commodities on which the CCC has loans. CCC operations have accounted for more

¹⁷*Explanatory Comments on Statement of Realized Cost of Agricultural and Related Programs, by Function or Purpose, Fiscal Years 1932-1959*, U. S. Department of Agriculture (December 1959).

¹⁸*Ibid.*

¹⁹Mimeographed report by U. S. Department of Agriculture dated December 8, 1959.

Table 1. Realized Cost of Federal Programs Primarily for Stabilization of Farm Prices and Incomes for the United States, 1932-1959*

Year	Amount (Millions of Dollars)	Year	Amount (Millions of Dollars)
1932	298.2	1946	2.0
1933	75.5	1947	88.5+
1934	48.4+	1948	118.6
1935	177.4	1949	328.4
1936	470.1	1950	458.4
1937	442.4	1951	509.3
1938	228.2	1952	288.6
1939	589.4	1953	312.5
1940	738.8	1954	785.0
1941	754.7	1955	902.0
1942	619.1	1956	1461.2
1943	497.2	1957	2714.3
1944	383.0	1958	2665.2**
1945	47.0	1959	2027.9**
TOTAL			18031.3

*Excess of Credits—Deduct.

**Explanatory Comments on Statement of Realized Cost of Agricultural and Related Programs, by Function or Purpose, Fiscal Years 1932-1959*, U. S. Department of Agriculture (December 1959).

***The Federal Budget in Brief, Fiscal Year 1960*. Executive Office of the President, Bureau of the Budget, January 1959, p. 56. (1959 is an estimate.)

than 34.8 per cent of total costs of group one programs during the period 1932-59, and in 1959 they accounted for more than 42 per cent. For comparative purposes, the following states were selected as specialized states producing these four commodities: Iowa—corn; Kansas—wheat; Texas—cotton; Kentucky—tobacco; and West Virginia as representing a marginal farming area. Table 2 shows the cumulative total CCC loans made by the selected states 1933-58.

Table 3 shows the extent to which West Virginia farmers have participated in the price support programs for corn and wheat for the period 1954-1957.

Although data were not available on the number of farmers participating, the proportions of the total amount of tobacco (handled by West Virginia tobacco markets) which were placed under the support program are shown in Table 4.

Although some out-of-state tobacco is included in the figures in Table 4 and some West Virginia tobacco was marketed through markets in other states, these figures give an idea of the percentage of West Virginia tobacco production which received price-support for the years shown.

**Table 2. Commodity Credit Corporation: Loans by Selected States
Cumulative 1933-1958***

State	Cumulative Loans		Per Cent of Total Farm Income For State
	Thousands of Dollars	Per Cent of Total Loans for U. S.	
West Virginia -----	1,366	.0047	.06
Kentucky -----	495,800	1.69	4.99
Iowa -----	2,133,106	7.29	5.40
Kansas -----	2,398,278	8.20	13.14
Texas -----	4,196,444	14.35	12.08
United States -----	29,252,112	100.00	5.40

*Source: *Agricultural Statistics*, 1959, U. S. Department of Agriculture, pp. 538-539.

**Table 3. Corn and Wheat: Number of Farmers Participating and
Extent of CCC Support, West Virginia, 1954-1957***

Year	Number Participating		Bushels Receiving Support	
	Corn	Wheat	Corn	Wheat
1954	25	52	20,186	34,664
1955	26	12	31,941	6,288
1956	14	3	16,821	1,051
1957	9	6	14,243	3,537

*State Agricultural Stabilization and Conservation Office, Morgantown, West Virginia.

**Table 4. Tobacco: Total Pounds Supported in Huntington Market and
Proportion of all Tobacco Handled in this Market,
that Received Support, 1950-1957***

Year	Number of Farms In West Virginia Harvesting Tobacco	Total Pounds Receiving Support	Proportion of Total Marketing Receiving Support
			Per cent
1950	2,801	535,482	9.2
1951		912,252	13.1
1952		569,804	8.1
1953		1,102,930	15.0
1954	3,407	1,244,666	15.1
1955	4,312	1,062,216	16.7
1956	4,305	43,191	.7
1957	3,670	283,401	3.8

*State Agricultural Stabilization and Conservation Office, Morgantown, West Virginia.

Corn and wheat are important as inputs to West Virginia farmers. West Virginia farmers purchase, in feeds, approximately 80 per cent as much corn as they produce and approximately 120 per cent as much wheat as they produce. On the other hand, State farmers place approximately 1 per cent of their production of corn and wheat under the price-support programs. In 1956, approximately 3 per cent of the farmers in West Virginia sold wheat and approximately 7 per cent sold corn, while 86 per cent bought feeds, exclusive of roughage.

Since less than 4 per cent of the cash receipts to farmers in West Virginia are from the sale of basic commodities (Figure 7) and since approximately 40 per cent of the cash receipts in the specialist states are from one commodity or related to one commodity, Tables 2 and 3 confirm that which would be expected; namely, that marginal areas receive relatively little direct aid from price and income programs. This then raises the question as to how price and income programs through long-term adjustments have affected farm incomes in the Appalachian Area. The remainder of this report is directed toward an answer to this question.

Theoretical Model

In terms of equilibrium theory, any change would set into operation certain economic forces which move in the direction of a new equilibrium position. The purpose of this section is to illustrate theoretically how programs designed to support and stabilize farm prices and income would be expected to affect farm income in marginal areas as compared to specialized areas through long-run adjustments. In the long run, the effects would be expected to become apparent through changes in the relative comparative advantage of the two areas; marginal and specialized. To begin with, the Appalachian Area (a marginal area) would be at a comparative disadvantage in the production of most farm products. Is this comparative disadvantage lessened or increased due to farm price and income programs?

Such programs tend to stabilize and support farm prices at higher levels. Stabilized and higher prices are signals to farm operators to adopt improved methods and new technology. The adoption of improved methods and new technology tend to:

1. Increase total output and reduce costs per unit of output.
2. Increase the use of capital and decrease the use of labor.
3. Cause more specialization both by areas and individuals.
4. Increase the size of production units.

Marginal areas are usually unable to adopt improved methods and new technology or they adopt them at a much slower rate than do specialized areas. The rapid adoption of improved methods and new technology by specialized areas tends to expand output faster than demand is expanding, therefore, there would be a downward pressure on farm prices. This downward pressure would catch the non-adopter in a tighter cost-price squeeze than the adopter. Consequently, marginal areas would be at a greater disadvantage than before the programs were initiated. Figure 9 illustrates this graphically.

Assume that $SS^1 S^2$ is the supply curve for agricultural products. Also assume that DD is the demand for agricultural products and remains constant and perfectly inelastic during the period under consideration. Now assume that those products representing SS^1 or the low cost 90 per cent of the supply being taken, adopt improved methods of production which reduces their costs and increases their output as represented by $S_3 S_4$. In order to construct the new supply curve, the $S^1 S^2$ section of the original supply curve must be shifted to the right and the new supply curve now becomes $S^3 S_4 S_5$. Now the producers that were originally producing 90 per cent of the supply or SS^1 are producing enough for the market and willing to supply it at a price of P_2 . Therefore, the price has moved lower than the cost of production of the

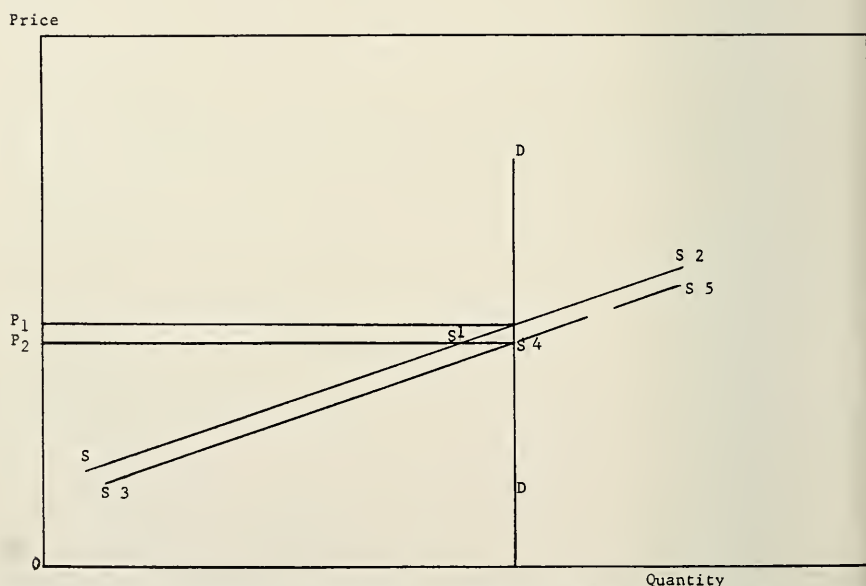


FIGURE 9. Hypothetical situation illustrating rapid technological change.

producers represented by the S^1 S^2 section of the supply curve. Consequently, strong pressures have been created to force them to shift out of production. This appears to be what has happened to the marginal producers in the Appalachian Area.

There appears to be ample evidence that price and income programs have both stabilized and supported prices. To cite an example, Shepherd and Richards say:

Our own over-all conclusion, based on the USDA studies and on our own analysis, is that in most years the withholding of the CCC stocks of corn from the market had a substantial supporting effect on corn prices, but that the effect in recent years was not as great as if corn had been consumed and removed entirely from the market. For feed grains as a whole, however, the effect of the withholding of the CCC stocks of feed grains appears to be as great as if the CCC stocks were removed entirely from the market.²⁰

Although the evidence indicates that farm price and income programs stabilize and support prices, the effect of more stable and higher prices on the adoption of new technologies must be established primarily on the basis of logic.

Cochrane presents the general framework in the following quotation:

... price fluctuations create uncertainties in the minds of producers and thus interfere with long-run production planning. I take it to be the case that the greater the price fluctuations, the greater the uncertainty, and the more reluctant the farmer is to make the additional cash outlays associated with increased capital inputs or the adoption of new technologies. The more stable the prices, assuming they are high enough to hold the farmer in production, the more sure he is of the future and the more willing he is to make the cash outlays associated with new techniques. Thus given the technologies and the average level of prices, I would expect to find the rate of technological advance more rapid with stable prices than variable prices. Further, I am inclined to guess that the efficiency implications to the economy of variable rates of technological advance are of greater importance than the static problem of variable proportions.

But the question arises—What evidence is there to support the above statements? I would offer two types. The first consists of an appeal to personal experience. I know that I would be more inclined to borrow funds and sink my savings in improved techniques to expand production where I was certain of the future than where I wasn't (assuming, of course, that the certain future is a happy one). Second, in the work we have been doing at Minnesota concerned with the impact of government programs on the potato industry we have observed the following: (1) the deflated price of potatoes averaged almost the same in the two periods 1934-41 and 1942-50, but (2) production jumped from an average of 369 million bushels per year in the first period to an average of 430 million bushels in the second. And this increase in output cannot be explained in terms of increased inputs of land and labor; both decreased in the second period.

²⁰Geoffrey Shepherd and Allen Richards, "Effects of the Federal Programs for Corn and Other Grains on Corn Prices, Feed Grains Production and Livestock Production," North Central Regional Publication No. 89, Iowa Agricultural and Home Economics Experiment Station Research Bulletin 459, Iowa State College, August 1958, p. 276.

We think it is to be explained in terms of increased specialization involving increased capital inputs and new methods. And this in turn was induced by a reduction in year-to-year price fluctuation from 39 per cent in the first period to 11 per cent in the second. In short, we say that the important supply response in potatoes during the support period 1942-50 cannot be explained in terms of a relative price change, but it can be explained in terms of elimination of price risk which resulted from the price stability provided by price supports.²¹

It is not meant to infer that price-support programs are the only stimulant to the adoption of new technology, however, such programs do appear to be a very important factor. For example, relatively high market prices would also be such a stimulant. It is argued, however, that government supported prices at the same level as free market prices are much more of a stimulant to the adoption of new technology than are free market prices because of less price risk. Support programs established a floor for prices and removed much of the risk of lower prices. Figure 10 presents a graphic picture of prices received by farmers and the realized costs of price and income programs. These data illustrate how the two supplement each other. For example, as the prices received by farmers decline, the expenditures for programs to support prices increase. Support programs may play an important part even though expenditures are low because they provide a floor or remove the risk of extremely low prices. This was the case during the late forties. As soon as prices received start down, however, program expenditures increase. This was the case in 1939, 1949, and again since 1953. Therefore, the data would indicate that price support programs have contributed to conditions which encourage farmers to adopt new technology where possible and feasible. Next we shall see if farmers did in fact make such adoptions.

Analysis of the Adoption of New Methods

One measure of the rate of adoption of new technology is the number of persons supported per farm worker. Table 5 shows this number in the United States at various points of time from 1820 to 1957. During this period the number of persons supported per farm worker increased from 4.12 to 23.55. This increase is equally divided between two periods: from 1820 to 1944 there was an increase of 9.72 persons, and between 1944 and 1957 there was an almost identical increase of 9.71 persons. In other words, when farm labor efficiency is measured in these terms, it increased as much during the last 13 years as it did during all of the first 124 years of the period.

²¹*Journal of Farm Economics*, The American Farm Economic Association, Vol. XXXV, December 1953, Number 5, "Discussion," Willard W. Cochrane, University of Minnesota, pp. 795-796.

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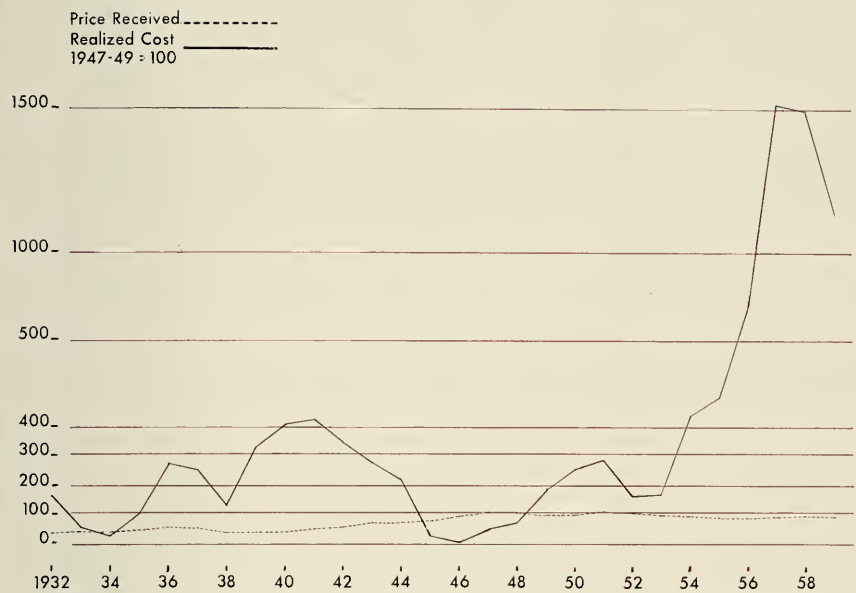


FIGURE 10. Prices received by farmers, realized cost of programs primarily to stabilize farm prices and income, 1932-59. (Source: United States Department of Agriculture.)

It is during this recent 13-year period that price-support programs have played their most important role. (The role has continued to be even more important in more recent years, but most of our data end with 1957.) More than 77 per cent of the total realized cost of the group one programs during the 1932-59 period was incurred between 1944 and 1959, a 15-year period. During the early part of this period, prices received by farmers were relatively high, and even though the expenditures incurred on these programs were small, the fact remains that the price-support programs were in effect. The mere fact that the price-support programs were available removed the risk of lower prices.

West Virginia has lagged behind the rest of the country in the adoption of new technology and increasing the efficiency of labor. The data in Table 6 give a clue as to the degree to which West Virginia is lagging behind in the adoption of technology. Usually, about three times as much labor is needed to harvest corn from the shock as to harvest by hand from the standing stalk, and about six times as much as to harvest with mechanical pickers. While 98 per cent of the corn for grain

**Table 5. Persons Supported by Production of One Farm Worker,
United States, 1820-1957**

Year	Persons Supported Per Farm Worker Total Number*
1820	4.12
1830	4.00
1840	3.95
1850	4.18
1860	4.53
1870	5.14
1880	5.57
1890	5.77
1900	6.95
1910	7.07
1920	8.27
1930	9.75
1940	10.69
1941	11.97
1942	12.97
1943	13.54
1944	13.84
1945	14.55
1946	14.28
1947	14.13
1948	14.52
1949	14.77
1950	15.49
1951	16.81
1952	17.32
1953	18.01
1954	18.72
1955	19.76
1956	21.92
1957	23.55

*Includes the farm worker.

Source: *Changes in Farm Production and Efficiency, A Summary Report*, U. S. Department of Agriculture Statistical Bulletin No. 233, Washington, D. C., August 1958.

in Iowa and 78 per cent in the United States was harvested with a corn picker, only 39 per cent was so harvested in West Virginia in 1956. In the same year, West Virginia shocked 40 per cent of the corn harvested for grain, whereas Iowa shocked less than one-half of 1 per cent, and the average for the United States was only 2 per cent.

The data in Table 7 further emphasize the degree to which West Virginia has fallen behind in the adoption of labor-saving methods

Table 6. Corn for Grain: Percentage Harvested by Methods in West Virginia, Iowa, and the United States for Specified Years

State	Percentage Harvested with Cornpicker				
	1938	1943	1946	1951	1956
United States -----	12	27	41	68	78
West Virginia -----	*	*	2	20	39
Iowa -----	35	63	76	95	98
	Percentage Harvested from Standing Stalk by Hand				
	1913	1943	1951	1956	
United States -----	61	59	28	17	
West Virginia -----	5	10	28	20	
Iowa -----	80	35	4	1	
	Percentage Cut and Shocked, Husked or Snapped				
	1913	1943	1951	1956	
United States -----	39	14	4	2	
West Virginia -----	95	89	52	40	
Iowa -----	41	5	1	*	

*Less than 0.5 per cent.

Source: *Harvesting the 1956 Corn Crop*, ARS 43-91, USDA, ARS, AMS, Washington, D. C., April 1959.

compared to the United States and selected specialized states in the production of corn, wheat, and tobacco. In 1950, West Virginia labor requirements per unit of output for each of the three crops were approximately the same as those of the United States in 1910-1914.

By 1950, the labor requirements for producing corn in West Virginia had decreased to 79 per cent of what they were in 1939, but in Iowa, an area of specialized production, they had dropped to 57 per cent.

By 1950, the labor requirements for producing wheat in West Virginia were 73 per cent of what they were in 1939, but in North Dakota, a wheat-growing state, they had dropped to 44 per cent. By 1950, the labor requirements in West Virginia for producing tobacco were 143 per cent of what they were in 1939, but in Kentucky, with its specialized tobacco areas, the requirements remained the same per unit of output. On the basis of general information and in the absence of exact data, we must conclude that these disparities in labor requirements have increased in the recent years, since 1950, at an even more rapid rate.

Figure 11 shows that West Virginia increased its use of fertilizer at about the same rate as the United States from 1929 until about 1950. Since 1950 the use of fertilizer in the United States has continued to increase, while in West Virginia it has tended to decline very rapidly.

Table 7. Labor Used Per Unit of Output for Corn, Wheat, and Tobacco for United States and Selected States *

Crop	United States		
	1910-1914	1935-1939	1950-1953
Corn —			
Man-hours per 100 bushels ----	135	112	34
Index -----	100	83	25
Wheat —			
Man-hours per 100 bushels ----	106	67	26
Index -----	100	63	25
Tobacco —			
Man-hours per 100 pounds ----	44	47	37
Index -----	100	107	84
	West Virginia		Specialized State
	1939	1950	1939 1950
Corn —			Iowa
Man-hours per 100 bushels ----	165	131	32 18
Index -----	100	79	100 56
Wheat —			North Dakota
Man-hours per 100 bushels ----	153	111	62 27
Index -----	100	73	100 44
Tobacco —			Kentucky
Man-hours per 100 pounds ----	37	53	33 33
Index -----	100	143	100 100

*Source: *Labor Used for Field Crops*, Statistical Bulletin No. 144, ARS, USDA, Washington, D. C., June 1954.

Johnson and Bachman estimate the importance of fertilizer in increasing farm output in the following quotation: "Increased use of commercial fertilizer has made the greatest contribution to higher crop yields in the last 15 years. Probably it accounted for more than half of the increase in crop production per acre."²² They estimate that nearly half of the increase in output has come from higher crop production per acre.

The use of limestone in West Virginia has been reduced rapidly since the early forties, whereas in the United States it has continued to increase. For example, in 1958 West Virginia used only 31 per cent of the limestone it used in 1944, and the United States used 189 per cent of what it used in 1944.²³

The impact of the relative rates of adoption of new technology is reflected in net income. During periods of rapid technological development, net income to West Virginia farmers falls behind that of the

²²*Farm Policy Forum*, Volume 11, No. 3, 1958-59, p. 9.

²³Source: National Agricultural Limestone Institute, Inc., Washington, D. C.

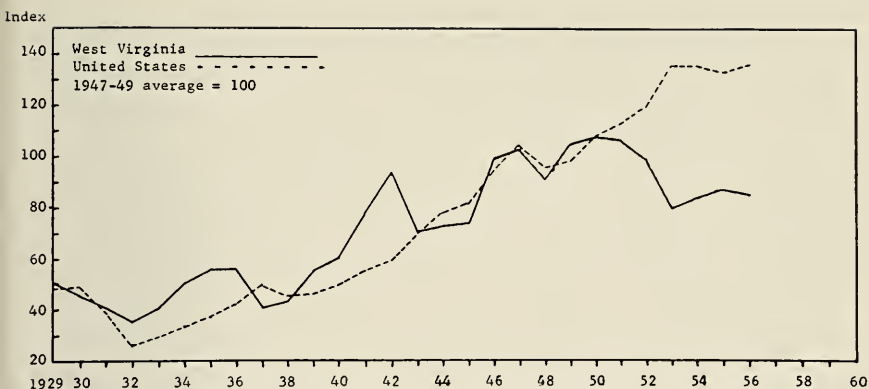


FIGURE 11. Index of fertilizer used in United States and West Virginia, 1929-1956. (Source: Agricultural Statistics.)

specialized farm states and the United States average. The data in Table 8 show that from 1929 to 1940 net farm income for West Virginia, the United States, and certain specialized states moved along together. For example, on an index basis starting with 1929 as equal to 100, in 1940 the United States, West Virginia, and Texas all had an index of between 76 and 77; Kansas and Kentucky were slightly lower, between 67 and 68; Iowa was higher with an index of 92.5. During this period, 1930-1940, the average annual increase in output per farm worker was less than 1 per cent per year (Table 5). During the period 1940-1957, net farm income for the United States and the selected specialized states pulled away from that of West Virginia. For example, in 1957 the index of net farm income for West Virginia was still below 100—96.4, in the United States it was 194.3, Kansas 133.9, Kentucky 150, Texas 159, and Iowa 286.5. It was during this period, 1940-1957, that the average annual increase in output per worker was more than 7 per cent per year (Table 5). It was also during this period that farm prices were either relatively high or expenditures on group one programs were high (Figure 10). For example, more than 90 per cent of the total realized cost of group one programs occurred since 1940 (Table 1).

From 1910-1940 the index of farm value of corn and wheat in West Virginia moved along at about the same level as that for the United States. Indices for both West Virginia and the United States in 1940 were approximately what they were in 1910, or 100 (Figures 12 and 13). Since 1940, however, the indices of the farm value of corn and wheat for the United States have pulled away from those for West Virginia. For example, in 1959, the indices of the United States were: corn—317

Table 8. Index of Net Farm Income for the United States and Selected States, 1929-1959, Index—1929=100*

Year	United States	West Virginia	Iowa	Texas	Kansas	Kentucky
1929	100	100	100	100	100	100
1930	69.2	64.3	72.0	62.1	78.2	53.1
1931	52.8	85.7	32.0	48.2	60.3	68.8
1932	32.4	48.2	23.1	34.4	6.3	36.2
1933	40.8	66.1	17.3	47.8	20.1	39.3
1934	41.0	53.6	3.7	45.8	19.5	40.8
1935	84.4	84.0	96.3	70.5	77.0	62.8
1936	66.2	73.2	38.6	57.3	55.7	55.6
1937	94.1	98.2	119.9	83.3	82.2	108.7
1938	72.6	78.6	82.4	62.8	55.8	70.4
1939	72.3	82.1	80.7	68.7	49.4	65.8
1940	76.5	76.8	92.5	76.0	67.8	67.3
1941	109.0	92.9	117.6	97.4	106.3	82.7
1942	167.7	119.6	208.6	137.2	202.3	126.0
1943	190.4	139.3	230.5	171.1	298.6	151.5
1944	193.1	128.6	175.2	170.0	241.4	164.3
1945	198.1	155.4	186.5	135.7	217.2	174.0
1946	233.6	171.4	271.2	164.8	250.0	198.0
1947	242.7	169.6	217.0	245.4	405.7	188.7
1948	280.5	191.1	414.0	196.3	305.7	227.6
1949	216.6	157.7	210.1	270.2	228.2	190.0
1950	234.6	142.0	307.7	211.2	286.9	163.5
1951	273.7	177.0	298.0	245.6	237.5	210.2
1952	257.0	163.4	322.0	204.7	316.3	187.4
1953	222.5	126.1	238.9	165.7	154.1	169.9
1954	212.7	139.6	312.3	173.6	215.1	181.4
1955	197.2	109.8	176.1	158.0	119.7	153.0
1956	194.7	103.7	197.6	127.4	115.4	175.1
1957	197.4	85.7	290.3	158.4	133.0	146.3
1958	234.9	108.0	280.1	228.0	293.3	177.8
1959	198.2	89.3	208.8	197.6	191.8	156.4

*Source: U. S. Department of Commerce and USDA.

and wheat—347, while for West Virginia they were corn—95.6 and wheat 38.1 (Figures 12 and 13). Tobacco has followed somewhat the same pattern; in 1959 the index of farm value for the United States was 984 and West Virginia 176, with the bulk of the spread taking place since 1940 (Figure 14).

Data indicate that an extremely small part of the cost of price and income programs are expended on marginal farms, while the specialized areas receive most all of such expenditures. For example, West Virginia

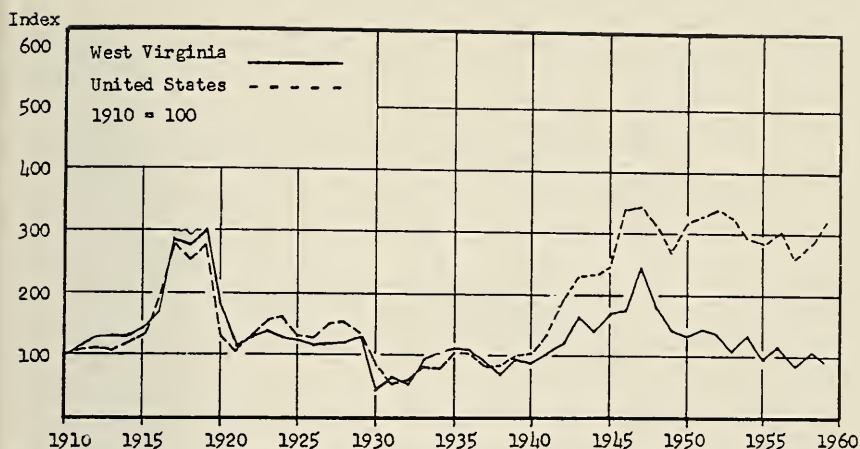


FIGURE 12. Corn: Indices of farm value in West Virginia and United States, 1910-1959. (Data from Agricultural Statistics, United States Department of Agriculture, issued as follows: 1952, pp. 35-36; 1956, p. 27; and West Virginia Agricultural Statistics, Federal-State Crop Reporting Service, issued as follows: 1943, pp. 33-34; 1951, p. 26; 1956; p. 38, December 1959.)

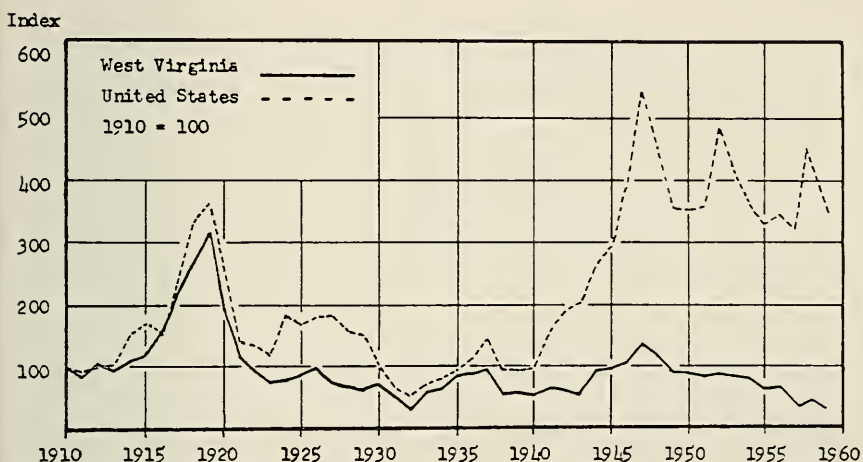


FIGURE 13. Wheat: Indices of farm value in West Virginia and United States, 1910-59. (Data from Agricultural Statistics, United States Department of Agriculture, issued as follows: 1952, pp. 1-2; 1956, p. 1; and West Virginia Agricultural Statistics, Federal-State Crop Reporting Service, issued as follows: 1943, pp. 35-36; 1951, p. 28, 1956, p. 39, December 1959.)

received one-half of one hundredth of 1 per cent of the cumulative cost of CCC loans for the United States from 1933-1957 (Table 2); Kentucky accounted for 1.87, Kansas 7.72, Iowa 7.32, and Texas 13.64 per cent. Figure 15 illustrates the degree to which some of our basic crops

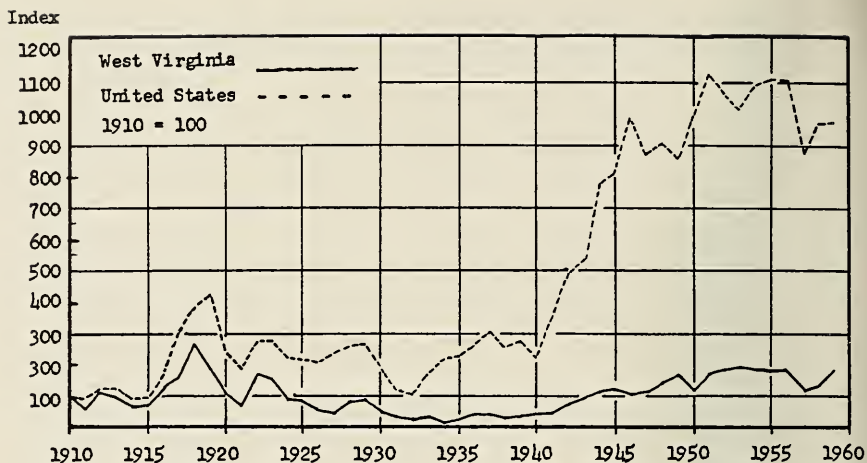


FIGURE 14. Tobacco: Indices of farm value in West Virginia and United States, 1910-1959. (Data from Agricultural Statistics, United States Department of Agriculture, issued as follows; 1952, pp. 126-127; 1956, p. 95; and West Virginia Agricultural Statistics, Federal-State Crop Reporting Service, issued as follows: 1943, pp. 39-40; 1951, p. 32; 1956, p. 36, December 1959.)

are concentrated in the hands of a relatively few specialized producers. The bulk of total farm sales are also concentrated in the hands of relatively large producers. In 1954, 44 per cent of the farms in the nation accounted for 91 per cent of the value of sales, while 56 per cent of the farms accounted for 9 per cent of sales.²⁴

The bulk of the evidence presented would tend to support the validity of the hypothetical model presented; that is, that specialized areas and farmers produce most of our farm products (44 per cent produce 91 per cent); that virtually all of the expenditures on price and income support programs have been expended in the specialized areas; that farmers in the specialized areas have made rapid adoption of new technology since 1944, during which time farm prices were either relatively good or program expenditures were relatively high; marginal farmers either have not or have at a relatively slow rate adopted new technologies; that expanded production by the specialized farmers has tended to cause farm prices to move downward; and, finally, that marginal farmers are at a greater disadvantage relative to specialized farmers than they were before the programs were developed.

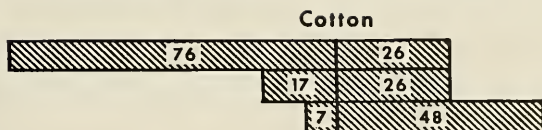
²⁴1954 Census of Agriculture.

SIZE OF ALLOTMENTS

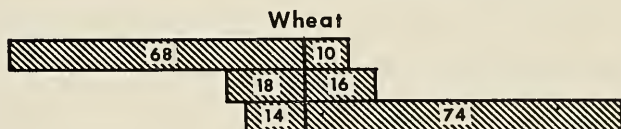
% OF ALL ALLOTMENT FARMS

% OF ALLOTMENT ACRES

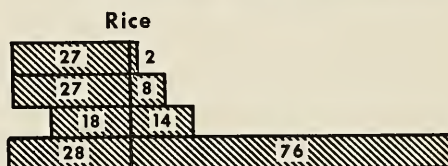
UP TO 14.9 ACRES
15 TO 49.9
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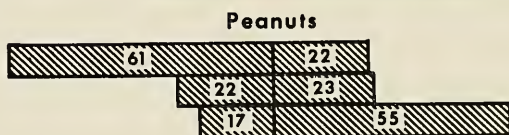
UP TO 15
15.1 TO 50
50.1 & ABOVE



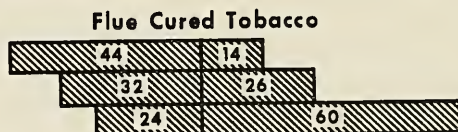
UP TO 15
16 TO 50
51 TO 100
101 & ABOVE



UP TO 10
10 TO 20
OVER 20



UP TO 2 ACRES
2 TO 4
OVER 4



UNDER 1
ABOVE 1 ACRE

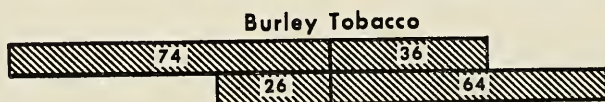


FIGURE 15. Basic crop allotment data. (Source: Statement by Secretary of Agriculture Ezra Taft Benson before the House Committee on Agriculture, July 9, 1959.)

Implications and Conclusions

In 1959 farm price support and related programs cost in excess of \$2 billion. Indications are that the direct effects of price and income support programs accrue mostly to the 44 per cent of the nation's farms whose products account for more than 91 per cent of the value of all farm sales. It is obvious that the 56 per cent of the nation's farmers

accounting for only 9 per cent of the total farm sales receive little direct help from such programs because these farmers market farm products in very small quantities and it is in the market place where most of the support programs are put into effect.

The evidence would indicate that price and income support programs have contributed to the rapid adoption of new technology in specialized areas in recent years. Marginal areas either have not adopted new technology or have adopted it at a relatively slow rate.

It would appear that price and income programs have encouraged the shifting of production from marginal areas to the specialized areas. For example, Shepherd and Richards²⁵ found that as a result of all influences corn acreage and production are in fact becoming somewhat more rather than less centralized in the heart of the Corn Belt.

Cochrane *et al.* found that potato programs were instrumental in accelerating movement toward more efficient production.²⁶ The shift in production from marginal areas to more specialized areas would increase the efficiency of production and would force marginal areas out of production, thereby reducing their income until alternatives are developed. Mackie and Baum came to similar conclusions as far as the adoption of new technology is concerned.

These farmers (the 'have-nots'—or low income farmers) lack adequate capital, land resources, and possible education to take advantage of the latest technical knowledge and innovations. So adjustments made by successful farmers appear to be impossible to this group. Thus, the recent technological revolution in agriculture has not only bypassed the 'have-not' farm people—it has left them relatively worse off.²⁷

It is the innovator and early adopter who profits, while the late adopter and non-adopter would be relatively more inefficient and relatively worse-off than before the new technology was introduced.

From the standpoint of welfare of society as a whole such shifts should be desirable. However, to the extent that low-income farmers are used as justification for price and income support programs and to the extent that the programs developed actually work to their disadvantage the programs have been disillusion.

The second phase of this study will examine in detail the direct effects of programs on the Appalachian Area farmers and it will also offer alternative programs for these farmers. The optimum allocation of the resources of the Appalachian Area farmer will require major reorganization and adjustment of farm resources and the movement of

²⁵Shepherd and Richards, *op. cit.*, p. 285.

²⁶R. W. Gray, V. L. Sorenson, and Willard W. Cochrane, *An Economic Analysis of the Impact of Government Programs on the Potato Industry of the United States*, University of Minnesota Agricultural Experiment Station Technical Bulletin 211, North Central Regional Publication No. 42, December 1953, p. 145.

²⁷*Farm Policy Forum, op. cit.*, p. 31.

some of the human resources to non-farm employment. Rural Development Program is directed more toward these adjustments than the price and income support program.
